

## ABSTRACT OF THE DISCLOSURE

A manufacturing method of an electronic device having a wiring connection structure which can prevent a loose connection between a via plug and a metal wiring is obtained. In an etching process to form a via hole (8), a mixed gas of  $C_4H_8$ ,  $O_2$  and Ar is employed as an etching gas. According to this, a surface of a side wall of the via hole (8) has a smooth shape without a microscopic unevenness on an upper part of the side wall of the via hole (8) at least. Accordingly, a gap caused by the microscopic unevenness described above does not occur between a barrier metal film (9) and the side wall of the via hole (8), and both sides stick to each other. As a result, in a cleaning process employing a hydrofluoric acid after a CMP process, a cleaning solution does not penetrate a metal film (3) through the gap between the barrier metal film (9) and the side wall of the via hole (8).